

**Remarks/Arguments**

Applicants thank the Examiner for careful consideration of the application.

No claims have been allowed by the Examiner.

**I. Election/Restriction:**

Applicants note that Examiner has withdrawn the species election for species (a)-(d), (f)-(i) and (k) but has maintained the restriction based on species (e) and (j). Examiner in this Office Communication states there are two patentably distinct species:

- (e) core/encapsulated component of claims 31, 34-38, and 41-45; and
- (j) core/encapsulated component of claims 58, 61-65, and 68-72.

Applicants respectfully traverse Examiner's restriction. Applicants believe that the restriction requirement is improper. Applicants assume for purposes of this response that Examiner has in fact identified 6 species instead of species (e) and (j). Applicant believes Examiner has identified the following species based on Examiner's request for Applicants to specify a single component:

- Species 1 claims 31 and 58 a bioactive agent;
- Species 2 claims 34, 41, and 61 a hemoglobin;
- Species 3 claims 35, 42, and 62 a red blood cell;
- Species 4 claims 36, 43, and 63 a living cell;
- Species 5 claims 37, 44, and 64 a protein; and
- Species 6 claims 38, 45, and 65 a peptide.

Applicants are unsure as to just what Examiner considers to be a species for a couple of reasons. First, Applicants note that Examiner in identifying (e) and (j) as separate species has identified in both the core/encapsulated component of various claims. Thus, Examiner has not provided any reasoned explanation of what each species is so that Applicants can reasonably respond to Examiner's restriction. For example, without further explanation by Examiner, Applicants are unsure why Applicants' election with traverse of hemoglobin does not include claim 41, in addition, to claims 34 and 61. Claim 41 discloses "wherein generating said microcapsule further comprises

encapsulating hemoglobin," and, as in claims 34 and 61, claim 41 recites hemoglobin. Second, Applicants continue to assert that Examiner has not established a prima facie case for restricting the claims of the application. Applicants continue to believe that claims to be restricted to different species must be mutually exclusive, i.e. they must have mutually exclusive characteristics as required by MPEP §806.04(f). Examiner has provided no reasoned explanation how the elements and limitations set forth in, for example, claims 31, 34-38, and 41-45 are mutually exclusive and therefore the restriction is improper.

Thus, Applicants hereby provisionally elect with traverse the species directed to hemoglobin. Applicants make this election based on the understanding that upon allowance of a generic claim, applicant will be entitled to consideration of claims to additional species. Therefore, Applicants believe, if Examiner maintains the current restriction requirement, that claims 31, 35-38, 42-45, 58, 62-65, and 68-72 should be withdrawn and than claim 41 should be pending and considered during prosecution.

## **II. Rejections under 35 U.S.C. §102(b):**

Examiner, on page 3 of the Office Communication has rejected claims 1-2, 4-8, 11-14, 17-18, 46-47, and 49 under 35 U.S.C. §102(b) as being anticipated by Loughman (WO 99/38535, "Loughman"). This rejection is respectfully traversed with regard to claims 1-2, 4-8, 11-14, 17-18, 46-47, and 49 because all of the elements of the claimed invention are not present in the cited reference.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *MPEP 2131*. The identical invention must be shown in as complete detail as is contained in the . . . claim. *MPEP 2131* citing *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226 (Fed. Cir. 1990).

Independent claim 1 discloses a "method of making a microcapsule, comprising: activating a fluid ejector at a frequency greater than 10 kilohertz, wherein each activation of said fluid ejector generates essentially a drop, said fluid ejector fluidically

coupled to a first fluid including a core component; ejecting essentially said drop of said first fluid into a second fluid, said drop having a volume; and generating a microcapsule in said second fluid for each drop of said first fluid ejected, wherein said microcapsule includes said core component." In contrast, Loughman discloses the "encasing of the bound microparticles can be achieved by . . . the use of an ultrasonic atomizer where a dispersion of the bound microparticles . . . is introduced as microdroplets into a cooled non-solvent medium . . . . Page 9, lines 25-28. In addition, Loughman further discloses, "[b]ound microparticles are encased with an absorbable encasing copolymer of lactide and glycolide using coagulation of solid microparticles encased in a polymer solution and delivered through an ultrasonic atomizer (nebulizer) into a liquid medium that is a non-solvent for the encasing polymer, but where the liquid medium non-solvent is capable of extracting the solvent of the encasing solution about the encased solid microparticles." Page 9, lines 29-34. Loughman also discloses the "number of the original bound microparticles in the encased microparticles can vary from 1 to several hundred." Page 10, lines 5-6. Applicants respectfully disagree with Examiner that Loughman in describing the use of an ultrasonic atomizer or nebulizer discloses that each activation of the ultrasonic atomizer generates a drop. Applicants assert that one of ordinary skill in the art would readily recognize that operating an ultrasonic atomizer generates many drops for each activation of the atomizer. In addition, Applicants respectfully disagree with Examiner that Loughman discloses that for each drop of first fluid ejected into the second fluid, the result is the generation of a microcapsule in the second fluid. Applicants noted above that Loughman discloses microparticles are encased with an absorbable encasing copolymer using coagulation of solid microparticles encased in a polymer solution and delivered through an ultrasonic atomizer (nebulizer) into a liquid medium that is a non-solvent for the encasing polymer, but where the liquid medium non-solvent is capable of extracting the solvent of the encasing solution about the encased solid microparticles, and does not disclose each drop ejected is encapsulated.

Thus, Loughman discloses a method of forming encased bound microparticles using an ultrasonic atomizer (nebulizer). Loughman does not disclose a "method of making a microcapsule, comprising: activating a fluid ejector at a frequency greater than

10 kilohertz, wherein each activation of said fluid ejector generates essentially a drop, said fluid ejector fluidically coupled to a first fluid including a core component; ejecting essentially said drop of said first fluid into a second fluid, said drop having a volume; and generating a microcapsule in said second fluid for each drop of said first fluid ejected, wherein said microcapsule includes said core component." Because Loughman does not disclose the claimed elements and limitations as recited in independent claim 1, Loughman does not anticipate or render obvious independent claim 1, since the above elements of the instant claimed invention are arranged in a manner distinct from that disclosed in Loughman.

Since a proper anticipation rejection requires that there be present in a single prior art reference a disclosure of all of the elements of the claimed invention arranged as in the claims, Applicants believe that Loughman does not anticipate the present invention. *See* MPEP 2131. Applicants note that independent claims 46 and 47 have elements and limitations pertaining to a drop on demand fluid ejector or fluid ejection device respectively and for the same reasons as argued for independent claim 1 are not disclosed by Loughman. Accordingly, Applicants believe that the rejection of claims 1-2, 4-8, 11-14, 17-18, 46-47, and 49 has been overcome. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of independent claims 1 and 46-47 based on Loughman under 35 U.S.C. § 102(b).

Dependent claims 2, 4-8, 11-14, 17-18, and 49 are dependent upon independent claims 1 and 47, and are therefore believed to be allowable as dependent upon a believed allowable claim. Accordingly, Applicants believe that the rejection of claims 2, 4-8, 11-14, 17-18, and 49 has been overcome at least for this reason alone. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claims 2, 4-8, 11-14, 17-18, and 49 under 35 U.S.C. § 102(b) in respect to Loughman.

In addition, in regards dependent claim 2, claim 2 discloses "wherein activating said fluid ejector further comprises activating a drop on demand fluid ejector." As noted above for claims 46 and 47 Loughman's disclosure of an ultrasonic atomizer does not disclose a drop on demand fluid ejector. Accordingly, Applicants believe that the

rejection of claim 2 has been overcome. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claim 2, under 35 U.S.C. § 102(b) in respect to Loughman.

In regards to dependent claims 4-8, Applicants respectfully disagree with Examiner's statement that each activation of Loughman generates a drop and therefore each of the elements and limitations claimed in dependent claims 4-8 is not disclosed and is not inherent in an ultrasonic atomizer for the reasons discussed above for independent claim 1 and dependent claim 2. In addition, dependent claims 7 and 8 claim ranges of drop volumes which Applicants assert is clearly absent from Loughman and cannot be considered inherent in a typical atomizer/nebulizer. Accordingly, Applicants believe that the rejection of dependent claims 4-8 has been overcome. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claims 4-8, under 35 U.S.C. § 102(b) in respect to Loughman.

In regards to dependent claims 12 and 13 claim 12 discloses "wherein activating said fluid ejector further comprises: applying an electrical pulse charging a nozzle through which said first fluid is ejected; and applying a voltage pulse to deflect a pre-selected number of drops," and claim 13 discloses "deflecting a pre-selected number of said drops into a recirculator." Applicants traverse Examiner's statement that the elements and limitations found in the instant case in claims 12 and 13 are disclosed in Loughman. Applicants have been unable anywhere in Loughman disclosure of an electrical pulse charging a nozzle, applying a voltage pulse to deflect a number of drops or deflecting a number of drops into a recirculator. Applicants respectfully request Examiner to particularly point out where in Loughman such a disclosure is made. Accordingly, Applicants believe that the rejection of dependent claims 12 and 13 has been overcome. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claims 12 and 13, under 35 U.S.C. § 102(b) in respect to Loughman.

In regards to claims 17 and 18, Applicants respectfully disagree with Examiner's statement that the ejection of a drop from a chamber through one nozzle formed in a

nozzle layer is disclosed in Loughman and therefore each of the elements and limitations claimed in dependent claims 17-18 is not disclosed and is not inherent in an ultrasonic atomizer. Applicants respectfully disagree with Examiner and assert that at a minimum Loughman does not disclose a nozzle formed in a nozzle layer. Accordingly, Applicants believe that the rejection of dependent claims 17-18 has been overcome. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claims 17-18, under 35 U.S.C. § 102(b) in respect to Loughman.

### **III. Rejections under 103:**

Examiner, on page 6 of the Office Communication has rejected claims 3 and 9-10 under 35 U.S.C. §103(a) as being unpatentable over Loughman (WO 99/38535, "Loughman") in view of Boucher et al. (U.S. Patent No. 6,641,254, "Boucher"). This rejection is respectfully traversed with regard to claims 3 and 9-10 since neither of the cited references Loughman, or Boucher taken either individually or in combination therewith, teach, suggest, or mention the claimed invention.

The rejections under 35 U.S.C. §103(a) are respectfully traversed. To establish a *prima facie* case of obviousness, three basic criteria must be met. There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, i.e. the prior art must suggest the desirability of the claimed invention. There must be a reasonable expectation of success. Finally to establish *prima facie* obviousness of a claimed invention, all claim limitations must be taught or suggested by the prior art. MPEP 2143.03 (*citing In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)). All words in a claim must be considered in judging the patentability of that claim against the prior art. *Id.* (*citing In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970)). These requirements are not met here.

In regards to the dependent claims, if an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. MPEP 2143.03. Dependent claims 3 and 9-10 are dependent upon independent claim 1, and are therefore

believed to be allowable as dependent upon a believed allowable claim. Accordingly, Applicants assert that, at least for this reason alone, the rejection has been overcome. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claims 3 and 9-10 under 35 U.S.C. § 103(a).

In regards to dependent claim 3, Loughman does not disclose, teach, or suggest, "activating a fluid ejector at a frequency greater than 10 kilohertz [and] ejecting essentially said drop of said first fluid into a second fluid, said drop having a volume; and generating a microcapsule in said second fluid for each drop of said first fluid ejected," as it is disclosed, defined, and claimed in dependent claim 3 by the Applicant in the instant specification. As discussed above Loughman discloses a method of forming encased bound microparticles using an ultrasonic atomizer (nebulizer). Boucher on the other hand discloses "[t]wo widely used energy generating elements are thermal resistors and piezoelectric elements. The former rapidly heats a component in the fluid above its boiling point causing ejection of a drop of the fluid. The latter utilizes a voltage pulse to generate a compressive force on the fluid resulting in ejection of a drop of the fluid." Col. 2, lines 4-10. Boucher does not disclose "activating a fluid ejector at a frequency greater than 10 kilohertz [and] ejecting essentially said drop of said first fluid into a second fluid, said drop having a volume; and generating a microcapsule in said second fluid for each drop of said first fluid ejected." Thus, the Examiner's suggested combination (which may or may not be proper) of Loughman and Boucher does not teach the present invention as recited in dependent claim 3. Accordingly, Applicants assert that the rejection has been overcome. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claims 3 and 9-10 based on Loughman in view of Boucher under 35 U.S.C. § 103(a).

Examiner, on page 7 of the Office Communication has rejected claims 29-30, 32-34, and 39-40 under 35 U.S.C. § 103(a) as being unpatentable over Loughman (WO 99/38535, "Loughman") in view of Wang (U.S. Patent No. 5,462,866, "Wang"). This rejection is respectfully traversed with regard to claims 29-30, 32-34, and 39-40 since neither of the cited references Loughman, or Wang taken either individually or in combination therewith, teach, suggest, or mention the claimed invention.

Dependent claims 29-30, 32-34, and 39-40 are dependent upon independent claim 1, and are therefore believed to be allowable as dependent upon a believed allowable claim. Accordingly, Applicant asserts that, at least for this reason alone, the rejection has been overcome. Therefore, Applicant respectfully requests that the Examiner withdraw the rejection of dependent claims 29-30, 32-34, and 39-40 under 35 U.S.C. § 103(a)

In regards to dependent claims 29-30, 32-34, and 39-40, Loughman does not disclose, teach, or suggest, "activating a fluid ejector at a frequency greater than 10 kilohertz [and] ejecting essentially said drop of said first fluid into a second fluid, said drop having a volume; and generating a microcapsule in said second fluid for each drop of said first fluid ejected," as it is disclosed, defined, and claimed in dependent claim 1 by the Applicant in the instant specification. As discussed above Loughman discloses a method of forming encased bound microparticles using an ultrasonic atomizer (nebulizer). Wang on the other hand discloses "a method for producing uniform polymeric spheres from polyanion and polycation monomers." Col. 3, lines 11-13. In addition, Wang discloses "a method for encapsulating living cells or tissue in uniform polymeric spheres." Col. 2, lines 21-22. Wang does not disclose "activating a fluid ejector at a frequency greater than 10 kilohertz [and] ejecting essentially said drop of said first fluid into a second fluid, said drop having a volume; and generating a microcapsule in said second fluid for each drop of said first fluid ejected." Thus, the Examiner's suggested combination (which may or may not be proper) of Loughman and Wang does not teach the present invention as recited in dependent claims 29-30, 32-34, and 39-40. Applicants traverse Examiner's statement that Wang envisages a variety of components and Applicants traverse Examiner's statement of the motivation for selecting applicants claimed elements and limitations. Applicants note that the motivation to combine must be found in the references themselves and Examiner cannot use Applicants' claims as a template and source of motivation to combine. Accordingly, Applicants assert that the rejection has been overcome. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claims 29-30, 32-34, and 39-40 based on Loughman in view of Wang under 35 U.S.C. § 103(a).



In regards to dependent claim 30, claim 30 discloses "wherein ejecting said first drop further comprises ejecting a drop of a first fluid immiscible with said second fluid." Applicants respectfully disagree with Examiner that Wang teaches, suggests, or mentions a first fluid immiscible with said second fluid and have been unable to find where in Wang such a disclosure is made. Applicants respectfully request Examiner to particularly point out where in Wang such a teaching or suggestion is made. Accordingly, Applicants assert that the rejection of claim 30, at least for this reason alone, has been overcome. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claim 30 based on Loughman in view of Wang under 35 U.S.C. § 103(a).

Examiner, on page 8 of the Office Communication has rejected claims 15-16 and 19-28 under 35 U.S.C. §103(a) as being unpatentable over Loughman (WO 99/38535, "Loughman") in view of Examiner's remarks. This rejection is respectfully traversed with regard to claims 15-16 and 19-28 since neither the cited reference Loughman, nor Examiner's remarks taken either individually or in combination therewith, teach, suggest, or mention the claimed invention.

In regards to claim 15, claim 15 discloses "ejecting said drop of said first fluid into a thin liquid film of said second fluid," and claim 16 discloses "flowing said thin liquid film of said second fluid in a direction perpendicular to a fluid ejection axis of a fluid ejector head." Applicants have been unable to find any teaching, suggestion, or mention in Loughman of such claim elements and limitations. Applicants respectfully request that Examiner particularly point out in Loughman where such a teaching, suggestion, or mention in Loughman is made. In addition, Applicants traverse Examiner's statement that Loughman would contemplate such claimed elements and limitations. Applicants note that the Examiner has cited only a single reference in support of the 103 rejection, which requires a high level of correlation between what is described in the cited reference and the claims proffered in the instant application. Applicants submit that that the description in Loughman is insufficient to describe, teach, or suggest the claims of the present application because each and every element

and limitation is not explicitly or implicitly stated, unless combined with another reference or the Examiner's personal knowledge. Applicants respectfully request a "citation of some reference work recognized as a standard in the pertinent art" that supports Examiner's position that Loughman contemplates ejecting a drop of a first fluid immiscible with said second fluid. In addition, Applicants believe that Examiner may be relying on Examiner's own knowledge since Examiner has not provided a reasoned explanation of how each of the elements and limitations or group of elements and limitations as claimed subject matter of claims 15-16 is obvious in view of Loughman. Thus, at this time Applicants request under 37 C.F.R. §1.104(d)(2) that if Examiner is relying on personal knowledge then Examiner should provide an affidavit with specific factual findings predicated on sound technical and scientific reasoning, that it would have been obvious at the time the invention was made, to a person having ordinary skill in the art, to modify the invention of Loughman so that Loughman would have the claimed limitations set out in claims 15 and 16. In regards to dependent claims 19-28, Applicants assert that the same arguments apply to these claims as applied to claims 15 and 16 and therefore Applicants request that Examiner either provide a reference for each claimed element and limitation or provide an affidavit if Examiner is relying on personal knowledge. Accordingly, Applicants assert that the rejection of claims 15-16 and 19-28 has been overcome. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claims 15-16 and 19-28 based on Loughman in view of Examiner's remarks under 35 U.S.C. § 103(a).

In regards to claims 50-55 Applicants assert that the same arguments apply to these claims as applied to claims 15 and 16 and therefore Applicants request that Examiner either provide a reference for each claimed element and limitation or provide an affidavit if Examiner is relying on personal knowledge. Accordingly, Applicants assert that the rejection of claims 50-55 has been overcome. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claims 50-55 based on Examiner's remarks under 35 U.S.C. § 103(a).

Examiner, on page 12 of the Office Communication has rejected claims 56-57, 59-61, and 66-67 under 35 U.S.C. §103(a) as being unpatentable over Loughman (WO

99/38535, "Loughman") in view of Wang (U.S. Patent No. 5,462,866, "Wang"). This rejection is respectfully traversed with regard to claims 56-57, 59-61, and 66-67 since neither of the cited references Loughman, or Wang taken either individually or in combination therewith, teach, suggest, or mention the claimed invention. Applicants believe that the arguments made above in regards to claims 29-30, 32-34, and 39-40 are applicable to claims 56-57, 59-61, and 66-67. Applicants traverse Examiner's statement that the combination of Loughman and Wang renders claims 56-57, 59-61, and 66-67 unpatentable. Accordingly, Applicants assert that the rejection has been overcome. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of dependent claims 56-57, 59-61, and 66-67 based on Loughman in view of Wang under 35 U.S.C. § 103(a).

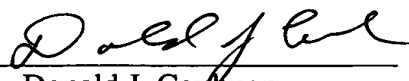
Therefore, in view of the foregoing Amendment and Remarks, Applicants believe the present application to be in a condition suitable for allowance. Examiner is respectfully urged to withdraw the rejections, reconsider the present Application in light of the foregoing Amendment, and pass the amended Application to allowance.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is respectfully requested to call Applicants' representative at (541) 715-1694 to discuss the steps necessary for placing the application in condition for allowance.

Favorable action by the Examiner is solicited.

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